RECLAMATION

Managing Water in the West

2015 Colorado River Annual Operating Plan

Colorado River Management Work Group Second Consultation
July 31, 2014



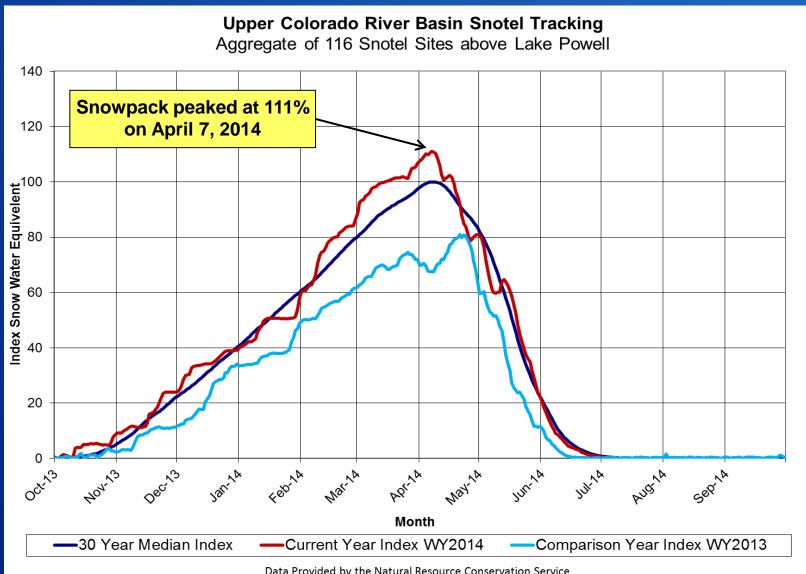
U.S. Department of the Interior Bureau of Reclamation

2015 Colorado River AOP Second Consultation Meeting

- Welcome and Introductions Malcolm Wilson / Chris Cutler
- Upper Basin Hydrology and Operations Katrina Grantz
- Lower Basin Hydrology and Operations Dan Bunk
- Progress in Implementing California's Colorado River
 Water Use Plan Tanya Trujillo
- Review of Draft 2015 AOP CRMWG
- Conclusion, Wrap-up, Future Meeting Date
 - Final Consultation September 4, 2015 at McCarran Airport



Upper Basin Hydrology



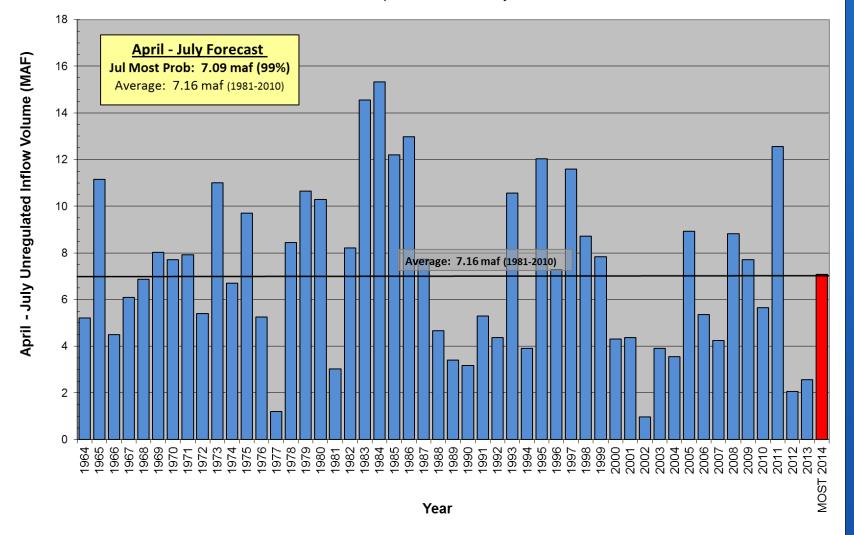
Data Provided by the Natural Resource Conservation Service



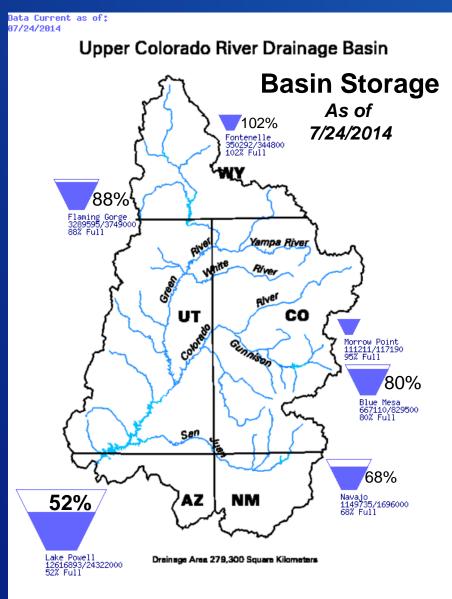
Lake Powell Unregulated Inflow

Apr - Jul 2014 Forecast (issued July 1)

Comparison with History



Upper Basin Storage



April to July Unregulated Inflow Forecasts (Issued July 1)

Reservoir	A-J Inflow Forecast (KAF)	Percent of Average ¹	
Fontenelle	1,050	145%	
Flaming Gorge	1,190	121%	
Blue Mesa	846	125%	
Navajo	425	58%	
Powell	7,090	99%	

¹ 1981-2010 period

Projected Operations Water Years 2014 and 2015

Lake Powell & Lake Mead Operational Table

Operational Tiers for Water Year/Calendar Year 2014

Lake Powell			Lake Mead		
Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf) ¹	Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf) ¹
3,700	Equalization Tier Equalize, avoid spills or release 8.23 maf	24.3	1,220	Flood Control Surplus or Quantified Surplus Condition Deliver > 7.5 maf	25.9
3,636 - 3,666 (2008-2026)	Upper Elevation Balancing Tier ² Release 8.23 maf:	15.5 - 19.3 (2008-2026)	1,200 (approx.) ²	Domestic Surplus or ICS Surplus Condition Deliver > 7.5 maf	22.9 (approx.) ²
	if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf		1,145	Normal or ICS Surplus Condition Deliver ≥ 7.5 maf	15.9 11.9
3,575	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet,	9.5	1,075	Shortage Condition Deliver 7.167 ⁴ maf	9.4 7.5
3,525	release 8.23 maf	5.9	1,050	Shortage Condition Deliver 7.083 ⁸ maf	7.5
	Lower Elevation Balancing Tier		1,025	Shortage Condition	5.8
3,490	Balance contents with a min/max release of 7.0 and 9.5 maf	4.0	1,000	Deliver 7.0° maf Further measures may be undertaken ⁷	4.3
3,370		0	895		0

Diagram not to scale

¹ Lake Powell and Lake Mead operational tier determinations were based on August 2014 24-Month Study projections and documented in the 2014 AOP.



Acronym for million acre-feet

This elevation is shown as approximate as it is determined each year by considering several factors including Lake Powell and Lake Mead storage, projected Upper Basin and Lower Basin demands, and an assumed inflow.

Subject to April adjustments which may result in a release according to the Equalization Tier

Of which 2.48 maf is apportioned to Arizona, 4.4 maf to California, and 0.287 maf to Nevada

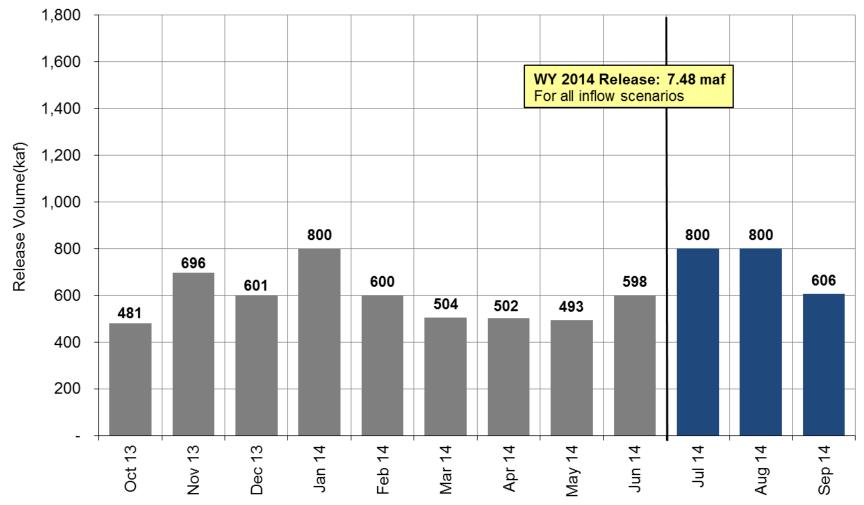
Of which 2.40 maf is apportioned to Arizona, 4.4 maf to California, and 0.283 maf to Nevada

Of which 2.32 maf is apportioned to Arizona, 4.4 maf to California, and 0.280 maf to Nevada

Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with the Basin States, may result in the undertaking of further measures, consistent with applicable Federal law.

Projected Lake Powell Monthly Release Volume Distribution

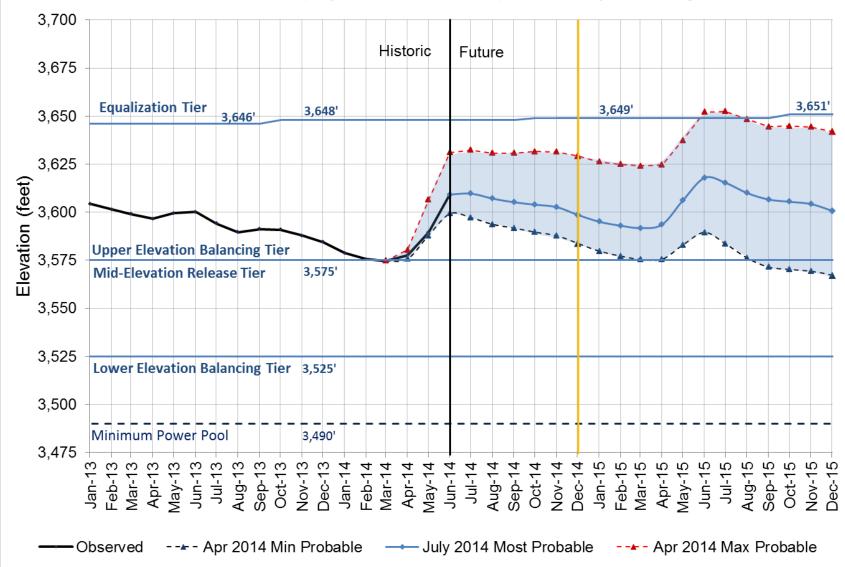
July 2014 Release Projections Water Year 2014



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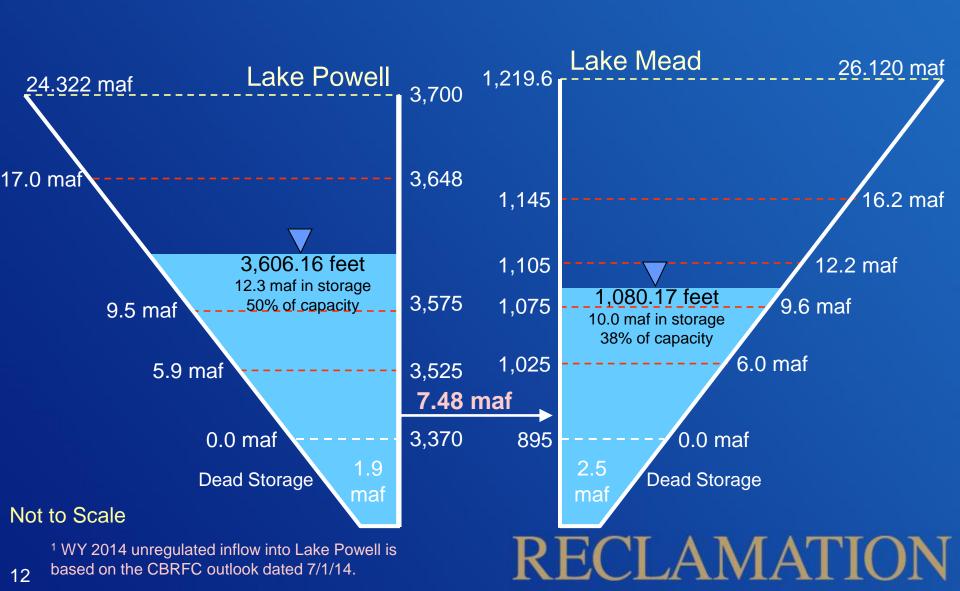
Lake Powell End of Month Elevations

Historic and projected based on April and July modeling

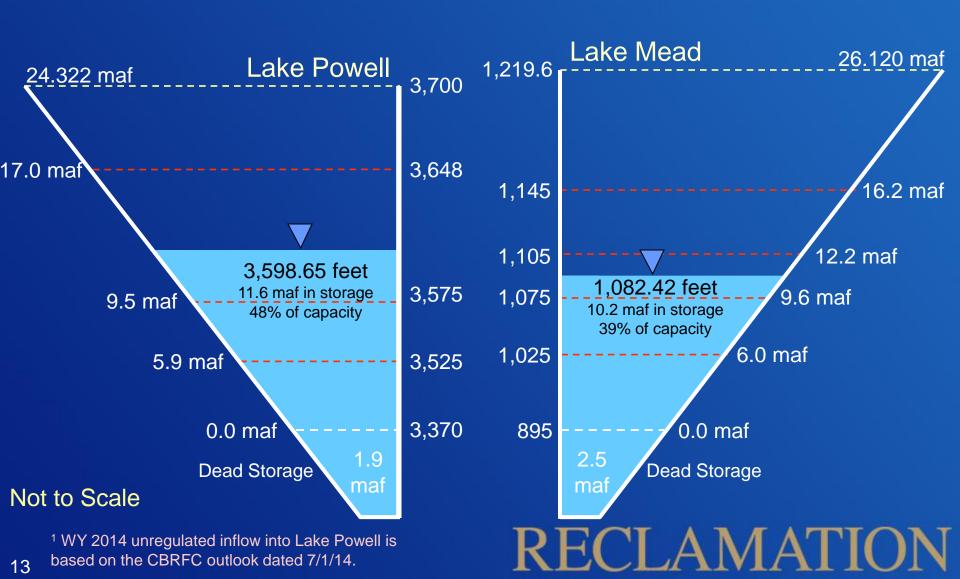


End of Water Year 2014 Projections July 2014 24-Month Study Most Probable Inflow Scenario¹

Projected WY Unregulated Inflow into Powell = 10.31 maf (95% of average)



End of Calendar Year 2014 Projections July 2014 24-Month Study Most Probable Inflow Scenario¹



Lake Powell & Lake Mead Operational Table

Projected Operational Tiers for Water/Calendar Year 2015 based on the July 2014 24-Month Study

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3,575	if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf		1,145	Normal or ICS Surplus Condition Deliver ≥ 7.5 maf	15.9 11.9	
	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet,	9.5	1,075	Shortage Condition Deliver 7.167 ⁴ maf	9.4	
3,525	release 8.23 maf	5.9	1,025	Shortage Condition Deliver 7.083 ⁵ maf	5.8	
3,490	Lower Elevation Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf	4.0	1,000	Shortage Condition Deliver 7.0° maf Further measures may be undertaken ⁷	4.3	
3,370		0	895		0	

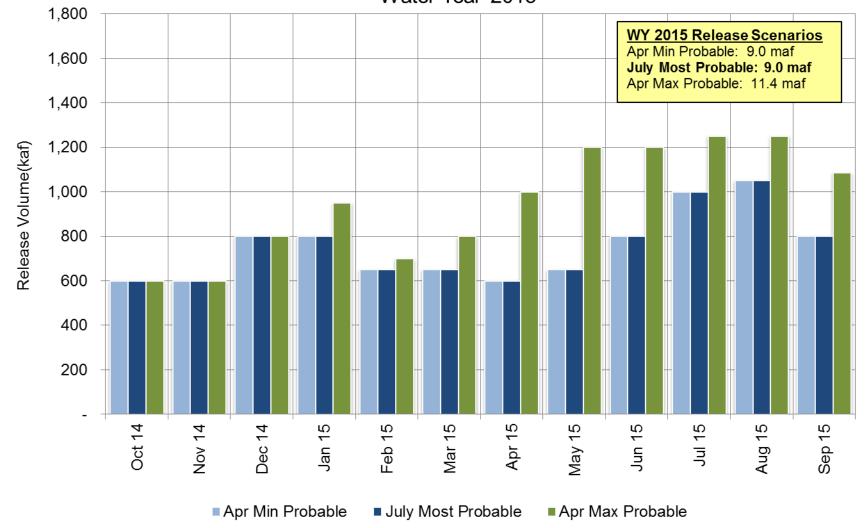
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- Acronym for million acre-feet
- ² This elevation is shown as approximate as it is determined each year by considering several factors including Lake Powell and Lake Mead storage, projected Upper Basin and Lower Basin demands, and an assumed inflow.
- Subject to April adjustments which may result in a release according to the Equalization Tier
- Of which 2.48 maf is apportioned to Arizona, 4.4 maf to California, and 0.287 maf to Nevada
- 5 Of which 2.40 maf is apportioned to Arizona, 4.4 maf to California, and 0.283 maf to Nevada
- Of which 2.32 maf is apportioned to Arizona, 4.4 maf to California, and 0.280 maf to Nevada
- Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with the Basin States, may result in the undertaking of further measures, consistent with applicable Federal law.



Projected Lake Powell Monthly Release Volume Distribution

April and July 2014 Projected Release Scenarios Water Year 2015





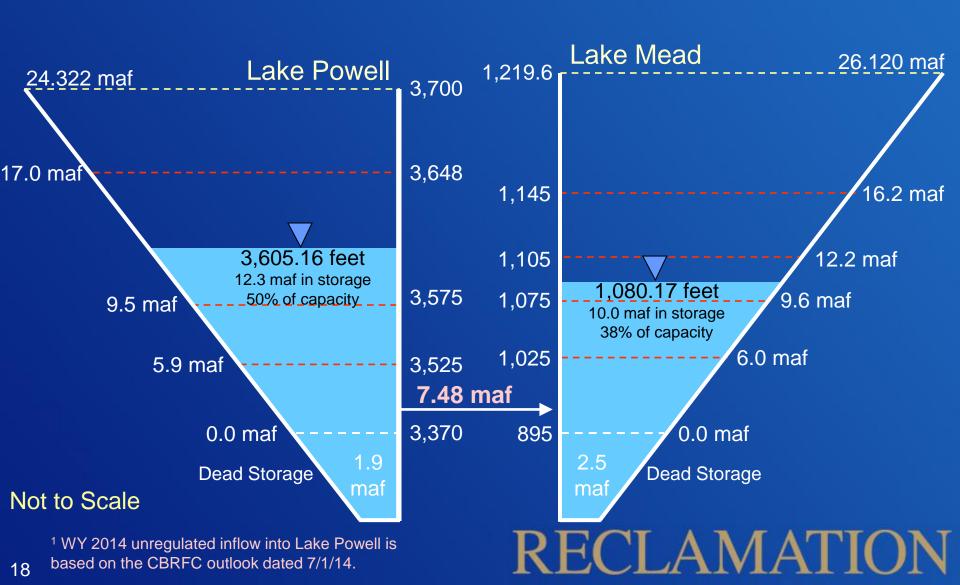
Colorado River Basin Storage (as of July 28, 2014)

Current Storage	Percent Full	MAF	Elevation (Feet)
Lake Powell	52%	12.6	3,608
Lake Mead	39%	10.1	1,081
Total System Storage*	51%	30.5	NA

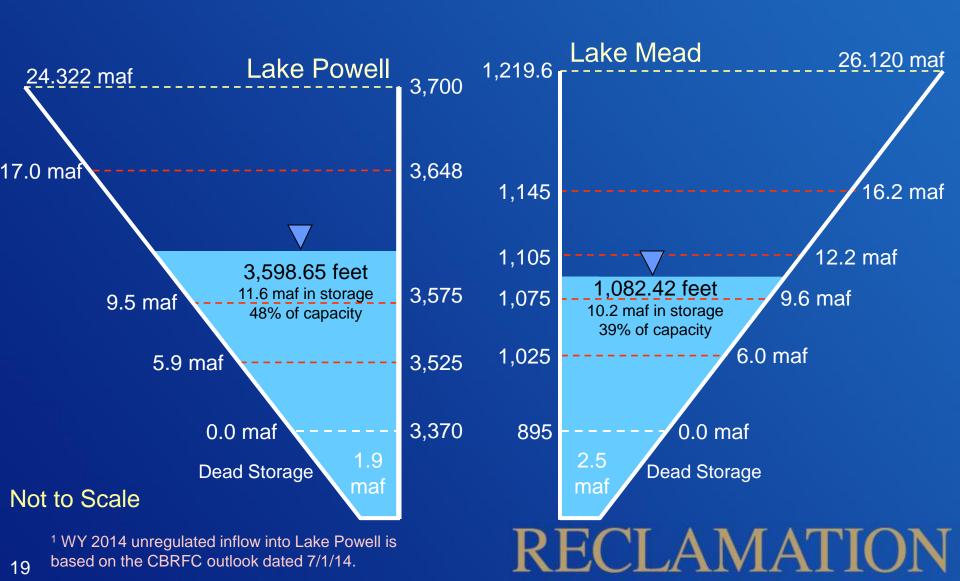
^{*}Total system storage was 30.4 maf or 51% this time last year

End of Water Year 2014 Projections July 2014 24-Month Study Most Probable Inflow Scenario¹

Projected Unregulated Inflow into Powell = 10.31 maf (95% of average)



End of Calendar Year 2014 Projections July 2014 24-Month Study Most Probable Inflow Scenario¹



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	Release 8.23 maf; if Lake Mead < 1,075 feet,		1,145		15.9
3,575	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,075 leet, balance contents with a min/max release of 7.0 and 9.0 maf	9.5	1,105	Normal or ICS Surplus Condition Deliver ≥ 7.5 maf	11.9
			1,075	Shortage Condition Deliver 7.167 ⁴ maf	9.4
3,525	release 8.23 maf	5.9	1,050	Shortage Condition Deliver 7.083 ^s maf	7.5
	Lower Elevation		1,025		5.8
3,490	Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf	4.0	1,000	Shortage Condition Deliver 7.0° maf Further measures may be undertaken ⁷	4.3
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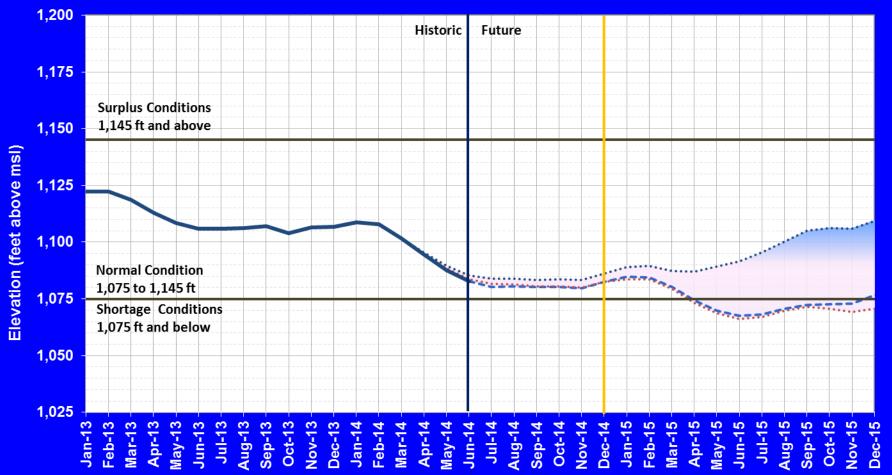
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Lake Mead End of Month Elevations

Projections from April and July 2014 24-Month Study Inflow Scenarios



...... April 2014 Probable Maximum Inflow with Lake Powell Release of 7.48 maf Water Year 2014 and 11.44 maf in Water Year 2015

·---July 2014 Most Probable Inflow with Lake Powell Release of 7.48 maf in Water Year 2014 and 9.00 maf in Water Year 2015

...... April 2014 Probable Minimum Inflow with Lake Powell Release of 7.48 maf in Water Year 2014 and 9.00 maf in Water Year 2015

Lower Basin Side Inflows — WY/CY 2014^{1,2} Intervening Flow from Glen Canyon to Hoover Dam

М	onth in WY/CY 2014	5-Year Average Intervening Flow (KAF)	Observed Intervening Flow (KAF)	Observed Intervening Flow (% of Average)	Difference From 5-Year Average (KAF)
	October 2013	52	38	73%	-14
	November 2013	52	101	194%	49
	December 2013	95	43	45%	-52
CAL	January 2014	75	45	60%	-30
HISTORICAL	February 2014	78	76	97%	-2
HST	March 2014	68	29	43%	-39
	April 2014	80	17	21%	-63
	May 2014	60	13	22%	-47
	June 2014	23	11	48%	-12
	July 2014	64			
	August 2014	116			
URE	September 2014	97			
FUTURE	October 2014	52			
	November 2014	52			
	December 2014	95			
	WY 2014 Totals	860	650	76%	-210
	CY 2014 Totals	860	668	78%	-192

¹ Values were computed with the LC's gain-loss model for the most recent 24-month study.



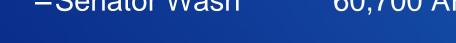
² Percents of average are based on the 5-year mean from 2009-2013.

YAO Operations Update

Brock Reservoir and Senator Wash
 2014 YTD accumulated storage¹

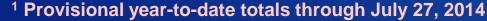
-Brock Reservoir 89,800 AF

-Senator Wash 60,700 AF



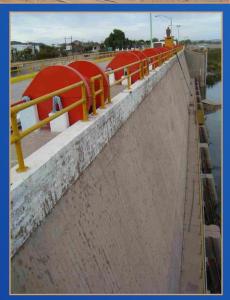


2014 YTD total 8,94



² Provisional year-to-date total through July 28, 2014





^{8,940} AF

YAO Operations Update

- Pumped drainage return flows from the Wellton-Mohawk Irrigation and Drainage District
 - Flow at station 0+00 on the Main Outlet Drain from January through June 2014 was 54,000 AF at 2,750 ppm
- Provisional drainage flows to the Colorado River
 - From the South Gila Drainage Wells
 January through June 30, 2014 was
 9,000 AF at 1,690 ppm
 - From the Yuma Mesa Conduit January through June 30, 2014 was 3,480 AF at 1,400 ppm

